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(54) An electronic apparatus indicating a menu in different languages

Elektronisches Gerät mit verschiedensprachigem Anzeigemenü

Appareil électronique indiquant un menu en différentes langues

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• PATENT ABSTRACTS OF JAPAN vol. 13, no. 409
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Description

The invention concerns an electronic apparatus having a display device in which a menu is displayed, according to which the operation is controlled. The invention concerns especially an electronic apparatus indicating the menu in one of different languages, which is selected by a user.

In an electronic apparatus which can be used in several countries or by a user having a knowledge of only different language from that in the country where the apparatus is sold, recently a set of same messages in different languages is prepared. A user can select his desired language in which the message can be displayed on the display thereof.

In the conventional electronic apparatus, because this selection of the language can be made in the part of the menu, it is necessary for a user to first select the item of language selection from the main menu and select a desired language from the language menu. This main menu is, however, normally preset to be displayed in the language used in the country where the apparatus is forwarded to from the factory. Therefore, if the user does not know sufficiently the language of that country, he does not immediately understand which item in the main menu is provided for the language selection, and there is a problem that the user takes time to set his desired language. This problem is solved by the teaching contained in the characterising portion of Claim 1.

The invention as claimed is intended to remedy these drawbacks. The language code memory is preset by a special code which is detected to display the language menu first and after a desired one from the languages listed in the language menu is selected, one of the normal codes each representing a different language is stored in the language code memory.

Therefore, in the beginning when a user starts using the apparatus, the language menu is inevitably displayed before the other menu is displayed. It makes the user easily select the language to be used in displaying the other menu. After the desired language is once selected, the language menu is not displayed normally until the user select the language menu from the other menu again and the other menu is displayed in the desired language selected by the user.

One way of carrying out the invention is described in detail below with reference to drawings which illustrate only one specific embodiment, in which:

Fig. 1 is a schematic block diagram showing a television apparatus 1 as an example of an electronic apparatus in accordance with the invention.

Fig. 2 is a schematic view of a remote commander 6 employed for controlling the television apparatus 1 shown in Fig. 1.

Fig. 3 is a schematic diagram showing an example of a menu construction used in the television receiver shown in Fig. 1.

Fig. 4A is a schematic diagram showing an example

of the main menu contained in the menu construction shown in Fig. 3 and described in English.

Fig. 4B is a schematic diagram showing an alternative example of the main menu described in German for the main menu shown in Fig. 4A.

Fig. 5 is a schematic diagram showing an example of the program table contained in the menu construction shown in Fig. 3.

Fig. 6A is a schematic diagram showing an example of the video connection menu contained in the menu construction shown in Fig. 3 and showing the initial state.

Fig. 6B is a schematic diagram showing another state of the video connection menu shown in Fig. 6A.

Fig. 7 is a schematic diagram showing an example of the language menu contained in the menu construction shown in Fig. 3.

Fig. 8 is a flow chart showing how to indicate the language menu and the other menu in accordance with the invention.

Fig. 9 is a functional block diagram showing the function of the controller 8 to realize the steps as shown in Fig. 8.

Referring to the drawings, an embodiment of a television apparatus to which the present invention is applied to will be explained. As shown in Fig. 1, the television apparatus (hereinafter referred to as TV apparatus) 1 is not specially different from a conventional one. In the TV apparatus 1, the TV signals from the TV signal receiving circuit 2, as well as the signals from the input terminals AV1, AV2, YC1, YC2, RGB and so on can be supplied to the switcher 3 which selectively supplies those signals to the signal processor 4. The signal processor 4 performs necessary signal processings and derives the processed picture signal to be displayed on the screen of the cathode ray tube (CRT) 5. The signal processings may include so called Picture in Picture (PIP) in which a sub-picture is simultaneously displayed within the main picture displayed on the screen.

Meanwhile, the TV apparatus 1 can be remotely controlled by the remote commander (IR commander) 6. Many kinds of command signals are received and decoded by the command decoder (IR decoder) 7 and the decoded commands are supplied to the controller 8 for example constructed by a micro-processor from which control signals are supplied to each element of the TV apparatus 1.

Because the TV apparatus 1 is controlled by using the menu displayed on the screen, the menu memory 9 is provided in the TV apparatus 1 and the menu is superimposed on the TV picture through the signal processor 4 according to the operation of the remote commander 6.

The remote commander 6 has, among others, as shown in Fig. 2, the power key 11, menu key 12, up key 13, down key 14, OK key 15 and return key 16 which are necessary to operate the menu. If the TV apparatus 1 is in the condition of stand-by, the power is turned on

when the power key 11 is depressed and a picture appears on the screen of the CRT 5. If the menu key 12 is depressed, the menu appears on the screen and the operation of the up/down keys 13 and 14 cause the movement of the cursor in the menu on the screen. The OK key 15 is used for data entry and the return key 16 is used for one-step back or the like. The remote commander 6 has other function keys which are not directly related to the invention and therefore the explanation of which will be omitted.

Now referring to Fig. 3 to 7, the menu construction regarding the main part of this invention will be explained. The menu is constructed as a whole to have a tree-structure and includes the main menu 17 at the top layer listing the titles of the sub-menus 18, 19, ..., 20, ... at the middle layer, in which many kinds of controls of the TV apparatus 1 or the like are made. At the bottom layer are the sub-menus having the functions listed in the sub-menu PRESET, respectively.

A set of the menus are prepared in advance and each of which has same contents but is described in each different language so that the menu described in a desired language which is selected in the language menu 20 as explained later can be displayed. It is not necessary here to explain all of the menu, and only a part of the menu enough to understand the feature of the invention is explained in detail as examples.

In order to change the TV mode in which a picture signal from the TV receiver 2 or other input is displayed on the screen to the menu mode in which the menu is displayed on the screen as superimposed and also to the contrary, the menu key 12 should be depressed.

The depression of the menu key 12 causes the main menu 17 as shown in Fig 4A to be displayed, which includes as a list the titles of the sub-menus such as program table, video connection, sleep timer, picture control, sound control, language and demonstration (demo).

The selection of the sub-menus 18, 19, ..., 20, ... can be performed by locating the cursor 21 at the desired item of the list in the menu 17, for example, with the operation of the up/down keys 13 and 14 so that the line indicated by the cursor 21 is high-lighted and then by depressing the OK key 15.

If the program table is selected in the list by way of an example, the sub-menu 18 for showing the program table is displayed as shown in Fig. 5, whereby it can be displayed which channel or input is preset to which program and what it is. If the cursor 22 is located to the item of the desired program by using the up/down keys 13 and 14 from Program 00 always at the beginning, the line indicated by the cursor 22 is highlighted. The program is selected by depressing the OK key 15 and the menu mode is changed to TV mode simultaneously so that the picture of the selected program is displayed on the screen, while the main menu 17 is again displayed if the return key 16 is depressed before the OK key is depressed. The preset of the programs displayed in this

program table is made by using the preset menu, though the detail will not be explained here.

If the video connection is selected in the list of the main menu 17, the sub-menu 19 for setting the video connection is displayed as shown in Fig. 6A. In the left column of the sub-menu 19 the input list 23 is indicated and it shows which inputs can be selected and which input is supplied with which signal source. This input list is only for display as same as the program table in the sub-menu 18 and the modification of the list can be made by using the preset menu.

In the middle column of the sub-menu 19, the main frame 24 imitating the main screen and the sub-frame 25 imitating the sub-screen within the main screen in the case of the PIP mode are illustrated. Hereby the signal sources of the inputs presently displayed on the main screen and on the sub-screen within the main screen are listed respectively adjacently to the label "TV" and the label "PIP" and the inputs to be displayed also can be selected in combination with the input list 23.

In the frame 26 in the right column of the sub-menu 19 it is indicated adjacently to the label "OUTPUT" which signal source of the input is presently supplied to the output terminal and the input to be connected also can be selected in combination with the input list 23.

When the sub-menu 19 is displayed, the cursor 27 points the label "TV" at the main frame 24 of the middle column as shown in Fig. 6A. In this situation, the cursor 27 can be moved to the label "PIP" at the sub-frame 25 of the middle column or the label "OUT" at the right column 26 by using the up/down keys 13 and 14. If the OK key 15 is depressed after the cursor 27 is located at a desired one, the cursor 27 is shifted to the input list 23 at the left column as shown in Fig. 6B, while the display of the signal source adjacently to the label which is previously pointed by the cursor 27 is flashing or blinking.

The cursor 27 can be located to select a desired signal source from the input list 23 by using the up/down keys 13 and 14 so that the signal source pointed by the cursor 27 is also indicated as blinking in one of the frames 24, 25 or 26, in which the label is previously pointed by the cursor 27. In this condition, if the OK key 15 is depressed, the selected signal source is actually supplied to.

For example, in order to display the signal source of the input AV 2 on the sub-screen in the PIP mode, after the sub-menu 19 is displayed, the cursor 27 is moved to the label "PIP" in the frame 25 and the OK key 15 is depressed to further move the cursor 27 to the input list 23. As the cursor 27 is shifted to the input AV 2, the label "MDP (Multi Disc Player)" is displayed as blinking adjacently to the label "PIP".

At that time, if the OK key 15 is depressed, the signal from the multi disc player is displayed on the sub-screen in the PIP mode. Simultaneously the cursor 27 is moved to the next item to be selected, in this case, to the label "OUTPUT".

If the return key 16 is depressed before the OK key

15 is depressed, the condition of one-step before is recovered. In the above case, for example, if the return key 16 is depressed before the OK key 15 is depressed last, the cursor 27 returns to point the label "PIP" and the cursor 27 can be moved again to the label "TV" or "OUTPUT" by using the up/down keys 13 and 14.

This feature of the video connection menu 19 can be used independently from the invention. The advantage of the sub-menu 19 is to make a user to easily understand the present connection of the input and to easily change the connection between each input and the TV screen, PIP sub-screen and the output in one menu or one image.

The language selection is performed by using the language menu 20 as shown in Fig. 7. The language menu 20 is used for designating the language in which the above mentioned other menus should be described. The language menu 20 indicates those languages for example in the own languages, i.e. ENGLISH, DEUTSCH, FRANÇAIS, ITALIANO, ESPAÑOL, NEDERLANDS.

If the cursor 28 is moved to the desired language similarly to the above, the line pointed by the cursor 28 is highlighted. When the OK key 15 is depressed, a code representing the designated language is stored in the language code memory 10 installed in the TV apparatus 1, while the display on the screen goes back to the main menu 17. At this moment, the main menu 17 is described in the designated language corresponding to the code stored in the language code memory 10 already.

It is, however, important in which language the main menu 17 is described when the user who obtained the TV apparatus 1 first turns on the power and depresses the menu key 17. For example, since the TV apparatus sold in the German market is bought in a high probability by users who understand German language, it is very reasonable to describe the main menu 17' in German language as shown in Fig. 4B. It is, however, still indefinite whether 100 % of the users may understand German language. If a user who can read only English obtained the TV apparatus 1, he wants to display the main menu 17 in English. He, unfortunately, does not understand which item in the list of the main menu 17' is for language selection, because the main menu 17' is described in German as shown in Fig. 4B.

Therefore, in the invention, the menu is not displayed in such the order as described above, but in order to solve this problem, the language menu 20 is once automatically displayed before the main menu 17 is displayed and the main menu 17 is sequentially displayed after the desired language is selected in the language menu 20, when the user who bought the TV apparatus 1 operates the menu key 12 at the first time.

After then the main menu 17 and the other menus (except the language menu 20) are always displayed in the selected language until the language to describe is changed to another language in the language menu 20

and it does not happen that the language menu 20 is always displayed first after the menu key 12 is depressed.

To realize the invention the control is made as below. When the TV apparatus 1 is forwarded from the factory, the language code memory 10 is preset into FF (hexadecimal) as a reset condition. When the user who bought the TV apparatus 1 turns the power and depresses the menu key 12, the code stored in the language code memory 10 is first checked at the step A as shown in Fig. 8. If the code is FF, the language menu 20 is displayed at the step B, by which the user can select the desired language at the step C. When the OK key 15 is depressed afterwards, the code representing the desired language is stored into the language code memory 10 at the step D. As such the codes, the code 00 designates for English, the 01 for German, the 02 for French, the 03 for Italian, the 04 for Spanish and the 05 for Dutch. After the code stored in the language memory 10 is checked again at the step E1 to E6, the main menu 17 described in the corresponding language according to the code stored in the language code memory 10 is displayed on the screen.

After any language is once selected in the language menu 20, the language menu 20 is not displayed even after the menu key 12 is depressed since the second time and the main menu 17 is displayed in the corresponding language, because the code 00 through 05 is stored in the language code memory 10 already.

Fig. 9 is a functional schematic diagram showing the construction of the controller 8 to realize the above steps illustrated in Fig. 8. The selecting signal from the selecting means as the remote commander 6 and the decoder 7 is supplied to the menu control means 29, 35 while the code signal stored in the code memory means 10 is detected by the code detecting means 31. If the code stored in the code memory means 10 is the special code FF, the menu control means 29 reads out the language menu 20 from the memory means 9 to be displayed on the screen of the display means 5. If the desired language is selected in the language menu 20, the menu control means 29 provides the location of the cursor 27 on the language menu 20 to the code supplying means 30 from which the language code corresponding to the selected language is supplied to the code memory means 10. The menu control means 29 receives the last stored code from the code memory 10 through the code detecting means 31 and selects the main menu 17 described in the selected language from the menu memory 50 to display it.

By the way, if the return key 16 is accidentally or intentionally depressed without any language selection by depressing the OK key 15 during the first display of the language menu 20, it is possible to return to the main menu 17. For this case, the main menu 17 described in English language may be displayed, even if the code FF is detected. If the user does not care about the language, it is more convenient.

Furthermore, although the language menu 20 shown in Fig. 7 is described in the own languages, it is also possible to describe each 6 languages in 6 different languages as a matrix as well as to indicate the kinds of the language in country codes like GB, D (or DE), FR, IT, ES, NL.

In the above description, the language code memory 10 and menu memory 9 are explained as separate memories. However, it is also possible to use the memory installed in the micro-processor of the controller 8 for this purpose.

According to the above embodiment, since the language menu 20 is inevitably displayed when the TV apparatus is first used, it is very easy for the user to operate the menu by selecting the desired language.

Claims

1. An electronic apparatus (1) indicating a menu in different languages comprising: display means (5);

menu memory means (9) for storing a language menu (20) indicating the kinds of language to be used and a set of other menus (17, 18, 19) each having essentially the same content but being described in different ones of the languages listed in the language menu (20);

menu control circuit means (29) for displaying the language menu (20) and one of the other menus (17, 18, 19) on the display means (5);

selecting means (6) for selecting a language from the language menu (20);

language code supplying means (30) for deriving a language code (00 to 05) representing the selected language;

language code memory means (10) for storing the code derived from the language code supplying means (30);

code detecting means (31) for detecting the code stored in the language code memory means (10); and

the menu control means (29) selecting one from the set of other menus (17, 18, 19) described in the language corresponding to the code stored in the language code memory means (10);

characterized in that

in the language code memory means (10) a special code (FF) other than the language codes (00 to 05) is preset as an initial value, and if the code detecting means (31) detects the special code (FF), the menu control circuit means (29) displays the language menu (20) before one of the other menus (17, 18, 19) is displayed, while if the code detecting means (31) detects a language code (00 to 05), the menu control circuit means (29) displays one of the other

menus (17, 18, 19).

2. An electronic apparatus as claimed in claim 1, wherein the other menus (17, 18, 19) include the language menu (20).

3. An electronic apparatus as claimed in claim 1 or 2, wherein the special code designates also one of the languages to be used.

Patentansprüche

1. Elektronisches Gerät (1), das ein Menü in verschiedenen Sprachen anzeigt, aufweisend:

eine Anzeigeeinrichtung (5);

eine Menüspeichereinrichtung (9) zum Speichern eines Sprachmenüs (20), das die zu verwendenden Sprachen anzeigt und eines Satzes von anderen Menüs (17, 18, 19), welche im wesentlichen den gleichen Inhalt haben, aber in verschiedenen der in dem Sprachmenü (20) aufgeführten Sprachen beschrieben sind;

eine Menüsteuerschaltungseinrichtung (29) zur Anzeige des Sprachmenüs (20) und eines des anderen Menüs (17, 18, 19) auf der Anzeigeeinrichtung (5);

eine Auswahlseinrichtung (6) zur Auswahl einer Sprache aus dem Sprachmenü (20);

eine Sprachcode-Versorgungseinrichtung (30) zur Ableitung eines Sprachcodes (00 bis 05), der die gewählte Sprache repräsentiert;

eine Sprachcode-Speichereinrichtung (31) zur Erfassung des in der Sprachcode-Speichereinrichtung (10) gespeicherten Codes; und

wobei die Menüsteuerereinrichtung (29) eines aus dem Satz der anderen Menüs (17, 18, 19) auswählt, das in der Sprache entsprechend des in der Sprachcode-Speichereinrichtung (10) gespeicherten Codes beschrieben ist;

dadurch gekennzeichnet, daß in der Sprachcode-Speichereinrichtung (10) ein spezieller Code (FF) anders als die Sprachcodes (00 bis 05) als 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470 475 480 485 490 495 500 505 510 515 520 525 530 535 540 545 550 555 560 565 570 575 580 585 590 595 600 605 610 615 620 625 630 635 640 645 650 655 660 665 670 675 680 685 690 695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770 775 780 785 790 795 800 805 810 815 820 825 830 835 840 845 850 855 860 865 870 875 880 885 890 895 900 905 910 915 920 925 930 935 940 945 950 955 960 965 970 975 980 985 990 995 1000 1005 1010 1015 1020 1025 1030 1035 1040 1045 1050 1055 1060 1065 1070 1075 1080 1085 1090 1095 1100 1105 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7110 7115 7120 7125 7130 7135 7140 7145 7150 7155 7160 7165 7170 7175 7180 7185 7190 7195 7200 7205 7210 7215 7220 7225 7230 7235 7240 7245 7250 7255 7260 7265 7270 7275 7280 7285 7290 7295 7300 7305 7310 7315 7320 7325 7330 7335 7340 7345 7350 7355 7360 7365 7370 7375 7380 7385 7390 7395 7400 7405 7410 7415 7420 7425 7430 7435 7440 7445 7450 7455 7460 7465 7470 7475 7480 7485 7490 7495 7500 7505 7510 7515 7520 7525 7530 7535 7540 7545 7550 7555 7560 7565 7570 7575 7580 7585 7590 7595 7600 7605 7610 7615 7620 7625 7630 7635 7640 7645 7650 7655 7660 7665 7670 7675 7680 7685 7690 7695 7700 7705 7710 7715 7720 7725 7730 7735 7740 7745 7750 7755 7760 7765 7770 7775 7780 7785 7790 7795 7800 7805 7810 7815 7820 7825 7830 7835 7840 7845 7850 7855 7860 7865 7870 7875 7880 7885 7890 7895 7900 7905 7910 7915 7920 7925 7930 7935 7940 7945 7950 7955 7960 7965 7970 7975 7980 7985 7990 7995 8000 8005 8010 8015 8020 8025 8030 8035 8040 8045 8050 8055 8060 8065 8070 8075 8080 8085 8090 8095 8100 8105 8110 8115 8120 8125 8130 8135 8140 8145 8150 8155 8160 8165 8170 8175 8180 8185 8190 8195 8200 8205 8210 8215 8220 8225 8230 8235 8240 8245 8250 8255 8260 8265 8270 8275 8280 8285 8290 8295 8300 8305 8310 8315 8320 8325 8330 8335 8340 8345 8350 8355 8360 8365 8370 8375 8380 8385 8390 8395 8400 8405 8410 8415 8420 8425 8430 8435 8440 8445 8450 8455 8460 8465 8470 8475 8480 8485 8490 8495 8500 8505 8510 8515 8520 8525 8530 8535 8540 8545 8550 8555 8560 8565 8570 8575 8580 8585 8590 8595 8600 8605 8610 8615 8620 8625 8630 8635 8640 8645 8650 8655 8660 8665 8670 8675 8680 8685 8690 8695 8700 8705 8710 8715 8720 8725 8730 8735 8740 8745 8750 8755 8760 8765 8770 8775 8780 8785 8790 8795 8800 8805 8810 8815 8820 8825 8830 8835 8840 8845 8850 8855 8860 8865 8870 8875 8880 8885 8890 8895 8900 8905 8910 8915 8920 8925 8930 8935 8940 8945 8950 8955 8960 8965 8970 8975 8980 8985 8990 8995 9000 9005 9010 9015 9020 9025 9030 9035 9040 9045 9050 9055 9060 9065 9070 9075 9080 9085 9090 9095 9100 9105 9110 9115 9120 9125 9130 9135 9140 9145 9150 9155 9160 9165 9170 9175 9180 9185 9190 9195 9200 9205 9210 9215 9220 9225 9230 9235 9240 9245 9250 9255 9260 9265 9270 9275 9280 9285 9290 9295 9300 9305 9310 9315 9320 9325 9330 9335 9340 9345 9350 9355 9360 9365 9370 9375 9380 9385 9390 9395 9400 9405 9410 9415 9420 9425 9430 9435 9440 9445 9450 9455 9460 9465 9470 9475 9480 9485 9490 9495 9500 9505 9510 9515 9520 9525 9530 9535 9540 9545 9550 9555 9560 9565 9570 9575

Menüsteuerschaltungseinrichtung (29) eines der anderen Menüs (17, 18, 19) anzeigt.

2. Elektronisches Gerät gemäß Anspruch 1, wobei die anderen Menüs (17, 18, 19) das Sprachmenü (20) enthalten.

3. Elektronisches Gerät gemäß Anspruch 1 oder 2, wobei der spezielle Code auch eine der zu verwendenden Sprachen bezeichnet.

5 10 15

nus (17, 18, 19).

2. Appareil électronique selon la revendication 1, où les autres menus (17, 18, 19) comportent le menu langues (20).

3. Appareil électronique selon la revendication 1 ou 2, où le code spécial désigne également l'une des langues à utiliser.

Revendications

1. Appareil électronique (1) fournissant un menu dans différentes langues, qui comprend :

un moyen d'affichage (5) ;
 un moyen (9) de mémorisation de menus servant à stocker un menu langues (20) qui indique les types de langues à utiliser et un groupe d'autres menus (17, 18, 19) ayant sensiblement chacun le même contenu, mais se présentant dans différentes de ces langues énumérées dans le menu langues (20) ;
 un moyen (29) formant un circuit de commande de menus servant à afficher le menu langues (20) et l'un des autres menus (17, 18, 19) sur le moyen d'affichage (5);
 un moyen de sélection (6) servant à sélectionner une langue dans le menu langues (20);
 un moyen (30) de délivrance de code de langue servant à produire un code de langue (00 à 05) qui représente la langue choisie ;
 un moyen (10) formant une mémoire de code de langue servant à stocker le code fourni par le moyen (30) de fourniture de code de langue ;
 un moyen (31) de détection de code servant à détecter le code stocké dans le moyen (10) formant la mémoire de code de langue ; et
 le moyen (29) de commande de menus sélectionnant un menu parmi l'ensemble d'autres menus (17, 18, 19), se présentant dans la langue qui correspond au code stocké dans le moyen (10) mémoire de code de langue ;

20 25 30 35 40 45

caractérisé en ce que :

dans le moyen (10) formant la mémoire de code de langue, un code spécial (FF) autre que les codes de langues (00 à 05) est prépositionné au titre de valeur initiale, et, si le moyen de détection de code (31) détecte le code spécial (FF), le moyen (29) formant le circuit de commande de menus affiche le menu langues (20) avant que l'un des autres menus (17, 18, 19) soit affiché, tandis que, si le moyen (31) de détection de code détecte un code de langue (00 à 05), le moyen (29) formant le circuit de commande de menus affiche l'un des autres mè-

50 55

Fig. 1

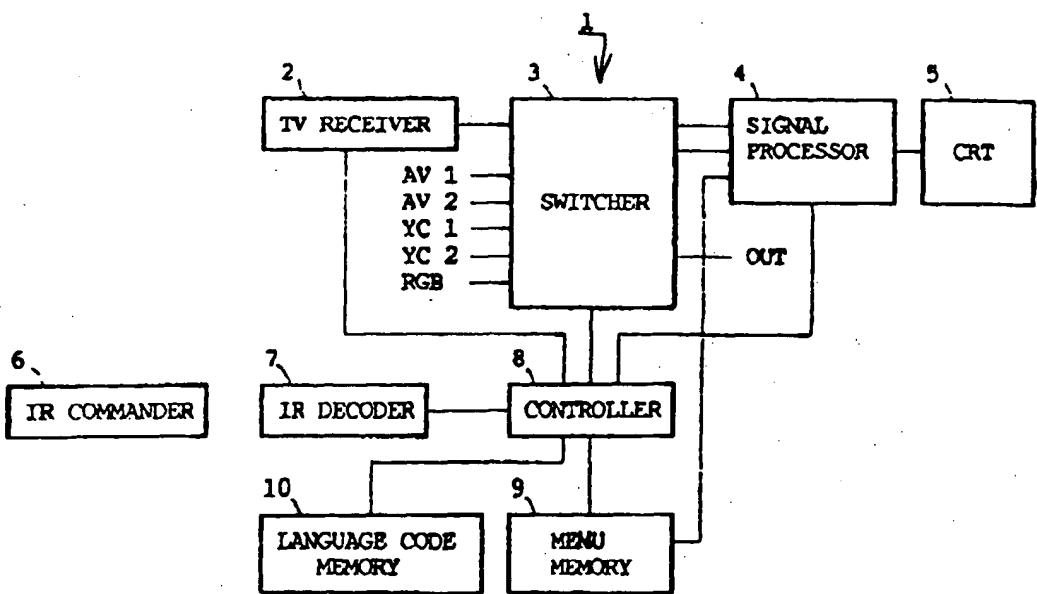


Fig. 2

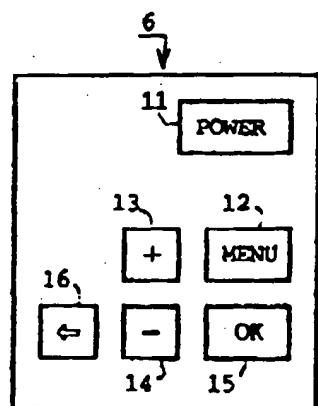


Fig. 3

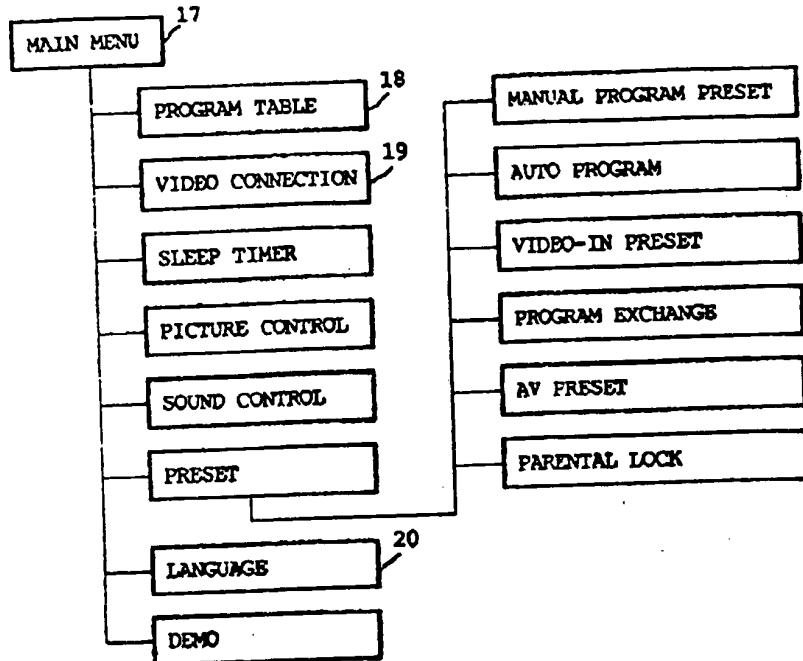


Fig. 4 A

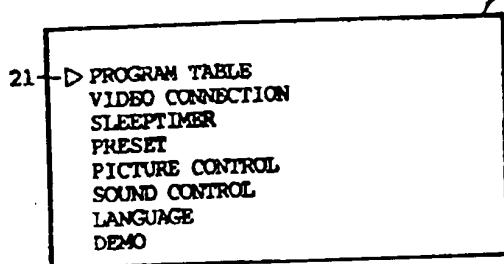


Fig. 4 B

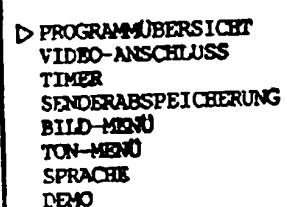


Fig. 5

18

PROGRAMME TABLE					
PROG	CH	LABEL	PROG	CH	LABEL
00	C01	ARD	08	C03	SAT 1
01	C42	ZDF	09	C22	RTL
02			10		
.			.		
.					
07			15		

22 ▷

Fig. 6 A

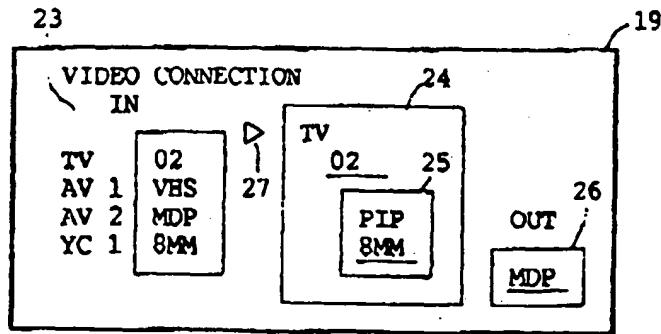


Fig. 6 B

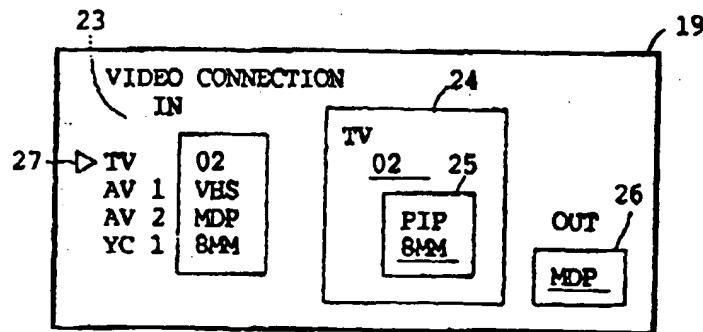


Fig. 7

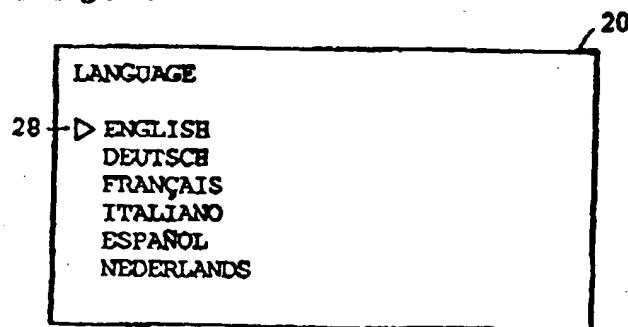


Fig. 8

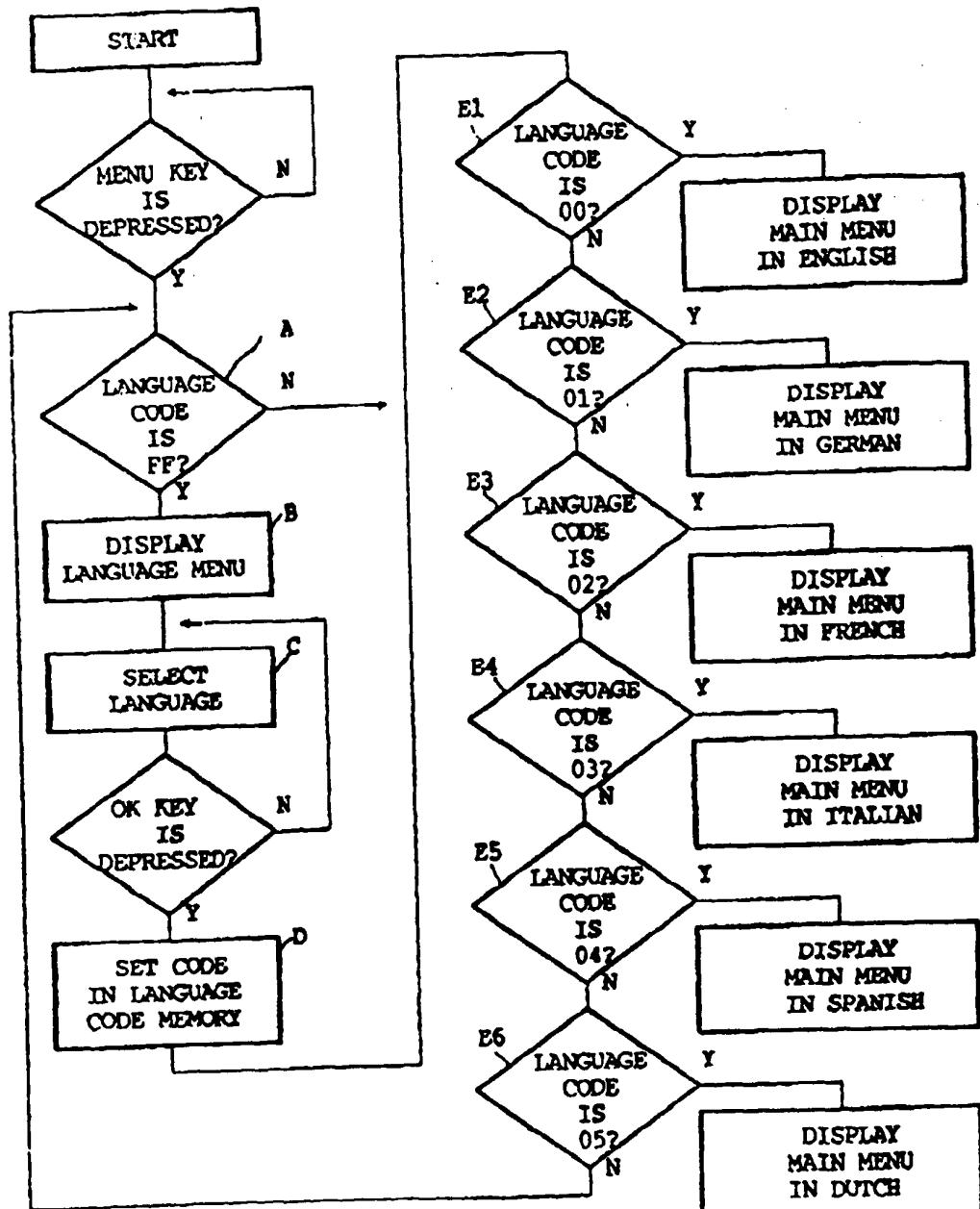
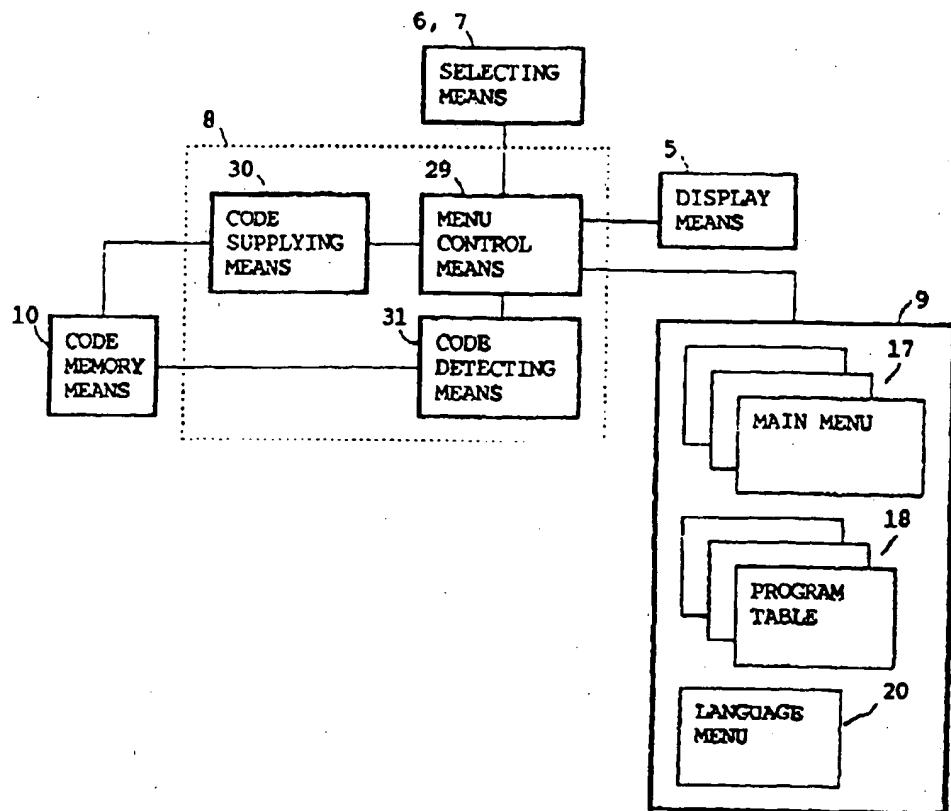


Fig. 9



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